

MNWR

MORBIDITY AND MORTALITY WEEKLY REPORT

597 Motor Vehicle-Related Burn Injuries —
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Perspectives in Disease Prevention and Health Promotion

Motor Vehicle-Related Burn Injuries — Massachusetts

To assess the importance of motor vehicles in causing persons to be hospitalized with burns, data were analyzed for Massachusetts residents burned in Massachusetts between July 1, 1978, and June 30, 1979, and treated as hospital inpatients in any of the 240 acute-care hospitals participating in the New England Regional Burn Program (NERBP).*

Of the 1,237 persons hospitalized for burns, 127 (10%) were hospitalized for motor vehicle-related burns. The incidence rate for these persons was 2.3 burns per 100,000 person-years. The rate varied considerably by age and sex (Table 1). The burn rate for males was approximately nine times that for females, accounting for 13% of all males hospitalized with burns in Massachusetts during the study period. For each sex, individuals 15-24 years old experienced the highest burn rates and accounted for half of all persons with vehicle-related burns.

Flame burns, associated with gasoline from carburetors, and scald burns from radiators were the most common types of injury, accounting for 35% and 32%, respectively, of all reported burns (Table 2). Burns from contact with hot tail pipes or engine surfaces accounted for an additional 14%, and 15% of burns were caused by vehicle crashes.

The average length of hospital stay for the 127 hospitalized burn patients was 12.9 days

*The NERBP was one of six projects within the National Burn Demonstration Project established under contractual agreements with the Division of Emergency Medical Services of the U.S. Department of Health and Human Services.

TABLE 1. Motor vehicle-related burn incidence rates, by age and sex of resident inpatients — Massachusetts, July 1, 1978,–June 30, 1979

Age category (years)	Rate*		
	Male	Female	Total
< 10	0.3	0.3	0.3
10-14	2.2	0.0	1.1
15-24	11.0	1.3	6.1
25-34	6.4	0.7	3.6
35-44	3.5	0.3	1.9
45-64	2.3	0.2	1.2
≥ 65	0.4	0.0	0.1
All ages	4.4	0.5	2.3

*Number of burns per 100,000 person-years.

Burn Injuries — Continued

(11.9 days for males; 21.2 days for females) (Table 2). Burns associated with vehicle crashes had the longest average stays, attributable in part to the need for medical treatment of other injuries sustained during the crash.

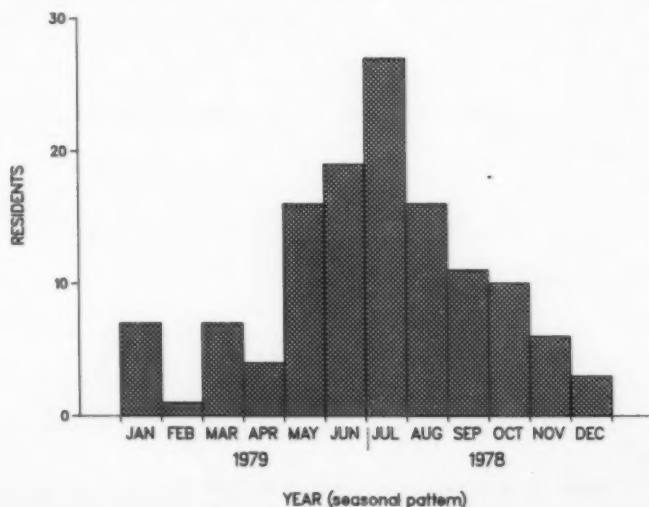
A strong seasonal variation in the incidence of vehicle-related burns was evident, with the estimated peak occurring in mid-July (Figure 1). Thirty-six percent of all vehicle-related burns occurred in June or July, and 61% occurred during the 4 months of May through August.

Reported by AM Rossignol, ScD, JA Locke, MPH, CM Boyle, MPH, JF Burke, MD, Dept of Civil Engineering, Tufts University, Medford, Massachusetts; Div of Injury Epidemiology and Control, Center for Environmental Health, CDC.

TABLE 2. Type of burn and average length of hospital stay for residents with motor vehicle-related burns, by sex — Massachusetts, July 1, 1978,–June 30, 1979

Type of burn	Sex				Total	
	Male		Female			
	No. burns	Average hospital stay (days)	No. burns	Average hospital stay (days)	No. burns	Average hospital stay (days)
Scald	39	6.9	2	10.0	41	6.9
Chemical	5	3.2	0	—	5	3.2
Contact	12	9.2	6	19.3	18	12.6
Flame						
Non-moving vehicle	43	12.1	1	20.0	44	12.3
Moving vehicle	15	30.3	4	29.8	19	30.2
All types	114	11.9	13	21.2	127	12.9

FIGURE 1. Residents hospitalized with motor vehicle-related burns, by month of occurrence — Massachusetts, July 1, 1978,–June 30, 1979 (presented as an annual curve)



Burn Injuries — Continued

Editorial Note: October 6-12 is Fire Prevention Week,[†] an appropriate time to consider the importance of fire- and burn-related injuries and the effectiveness of prevention efforts. Fires and burns, which cause about 6,000 deaths per year, are the fourth most common cause of death from unintentional injury, surpassed only by motor vehicle crashes, falls, and drownings. Over a million burn injuries each year require medical attention or restriction of activity. Each year, 90,000 patients are admitted to hospitals, and patients with burns require over a million days of hospital care—an average of 12 days of hospital care per admission. Severely burned patients may need skin grafting and frequently suffer disability, disfigurement, and emotional distress (1).

House fires account for approximately 75% of all deaths from fires and burns (2). Most deaths result from the toxic byproducts of combustion (1). Fatality rates are highest among young children and the elderly, who have difficulty escaping fires and reduced likelihood of survival after burn injuries. Cigarettes are the leading cause of fatal residential fires. High blood alcohol concentrations are found in about 50% of adults who die in house fires (2).

The U.S. Department of Health and Human Services has included reducing burn injuries in its 1990 objectives for the nation: (1) by 1990, residential fire deaths should be reduced to no more than 4,500 per year (between 1978 and 1982, annual residential fire deaths decreased by 900 per year); and (2) by 1990, at least 75% of residential units should have a properly placed and functioning smoke detector (smoke detector installation increased from 50% in 1980 to 67% in 1982) (2).

Many preventive measures have been recommended to save lives and to decrease injuries caused by fires and burns. Smoke detectors (alarms) provide an early warning of fire. Several studies have suggested that smoke detectors reduce the risk of death from fires (3,4); protection is increased if sprinkler systems are also used (4). More effort is needed to ensure that smoke detectors are not only installed but are also functioning properly, especially among groups at highest risk of death from fires. Enactment and enforcement of fire extinguisher codes and building construction codes have also prevented fire deaths (4).

Because up to two-thirds of persons dying in house fires are unable to escape, residents need to know exit routes and to have a well-prepared escape plan (4,5). Fire drills are an important component of preparation. Other prevention strategies may include increasing the self-extinguishing capacity of cigarettes (estimated to cause about half of fatal house fires); use of matches that burn at lower temperatures and self-extinguish when dropped; and use of flame-retardant fabrics and designs to prevent clothing and upholstery fires (4,6-8).

Instruction in fire-related emergencies and first aid should also help to prevent further injury once an incident has occurred. For example, use of the "drop and roll" technique for extinguishing burning clothing should be taught. The importance of cooling a burn with cold water—not butter—to stop skin damage and reduce pain should be emphasized (9).

The Massachusetts study of motor vehicle-related burns illustrates another aspect of preventing fire and burn-related injuries and mortality by demonstrating how local or regional inquiry can target problem areas for effective safety programs. Motor vehicle-related burns have rarely been studied in the past. The findings here show that male teenagers and young adults are at high risk for burns from carburetor gasoline fires and for scalds from radiator fluids, especially during the summer months. Such data will enable prevention efforts to be targeted more efficiently.

Some strategies to prevent motor vehicle-related burns, such as installing radiator safety caps, have been implemented. Teaching the hazards of "carburetor priming" and other potential areas of injury during drivers' education, automotive-repair classes, or testing for new drivers' licenses has been proposed.

[†]The theme of Fire Prevention Week is "Fire Drills Save Lives."

Burn Injuries — Continued

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Current Trends

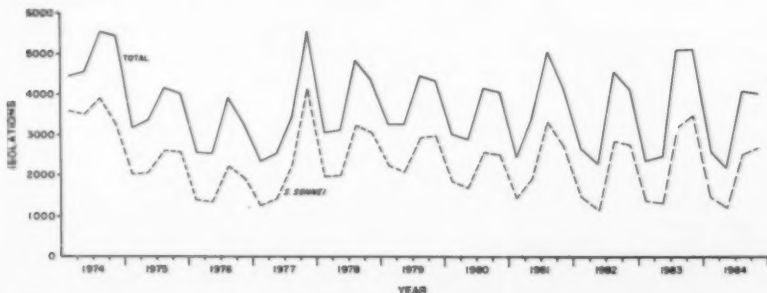
Shigellosis — United States, 1984

In 1984, 12,790 *Shigella* isolates from humans were reported to CDC. This is a 14.4% decrease from the 14,946 isolates reported in 1983. The number of isolates continues to be less than the 15,334 reported during the peak year, 1978 (Figure 2).

Shigella serotypes were reported for 12,179 of the 12,790 isolates. The most frequently isolated serotype, *S. sonnei*, comprised 64.4% of all isolates serotyped (Table 3). *S. flexneri* 1a accounted for 14.1% of all *S. flexneri* subtyped; 1b, 2.8%; 2a, 28.1%; 3a, 24.3%; and 6, 13.3%.

The number of reported isolates in every serotype decreased, compared with the numbers reported in 1983 (Table 3). *S. sonnei* decreased 15.3%; *S. flexneri*, 10.8%; *S. boydii*, 6.5%; and *S. dysenteriae*, 3.2%. The decreases were not confined to one state or region.

FIGURE 2. Reported *Shigella* isolates from humans, by quarter — United States, 1974-1984



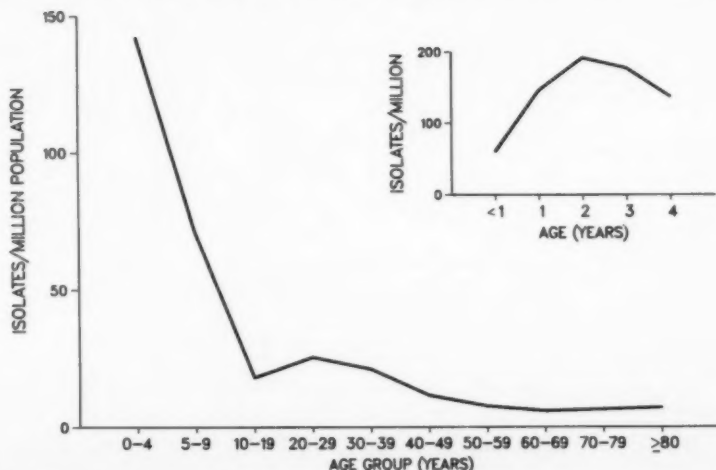
Shigellosis — Continued

The age-specific rate of reported isolates per 100,000 population was highest for 2-year-old children, lower for older children, and lowest for adults. The age-specific rate for 20- to 29-year-olds was slightly higher than the rates for the older children and the remaining age groups (Figure 3). In addition, in the 20- to 29-year-age group, a slightly higher rate was reported for females than for males. Rates of reported isolates by patient sex were similar for the remaining age groups.

Since some populations have higher rates than others, data were tabulated separately for patients residing in certain institutions (e.g. nursing homes, facilities for the mentally ill, and other resident-care centers) and on American Indian reservations. Only 2,416 (18.9%) of the reports included data on residence at the time of onset of illness. Of those specified, 22 (0.9%) lived in institutions, and 67 (2.8%), on Indian reservations. Fifteen (68.2%) of the reported isolates from residents of institutions were *S. sonnei*, and five (22.7%) were *S. flexneri*. Twenty-four (36.4%) of the reported isolates from Indian reservation residents were *S. sonnei*, and 42 (63.6%) were *S. flexneri*. For other known residences, *S. sonnei* accounted for 1,634 (71.7%); *S. flexneri*, for 587 (25.8%); *S. boydii*, for 34 (1.5%); and *S. dysenteriae*, for 24 (1.1%).

TABLE 3. *Shigella* serotypes isolated from humans — United States, 1984

Serotype	No. isolates reported		Isolates serotyped in 1984 (%)	Decrease from 1983 (%)
	1983	1984		
<i>S. sonnei</i>	9,267	7,847	64.4	15.3
<i>S. flexneri</i>	4,222	3,765	30.9	10.8
<i>S. boydii</i>	415	388	3.2	6.5
<i>S. dysenteriae</i>	185	179	1.5	3.2

FIGURE 3. Rate of reported *Shigella* isolates, by age of patient — United States,* 1984

*Age data unavailable for California.

Shigellosis — Continued

Reported by Statistical Svcs Activity, Enteric Diseases Br, Div of Bacterial Diseases, Center for Infectious Diseases, CDC.

Editorial Note: This report is based on CDC's *Shigella* Surveillance Activity, a passive laboratory-based system that receives reports from the 50 states and the District of Columbia. These reports do not distinguish between clinical or subclinical infections or between chronic or convalescent carriers.

Tetanus — United States, 1982-1984

From 1982 through 1984, 253 U.S. cases of tetanus were reported to the *MMWR* (88 in 1982, 91 in 1983, and 74 in 1984). Forty states and the District of Columbia reported at least one case; 19 states reported cases in all 3 years. The 10 states reporting no cases are located in the western and northeastern United States (Figure 4). The average annual incidence rate for 1982-1984 was 0.036 cases per 100,000 total population, compared to

(Continued on page 607)

TABLE I. Summary—cases of specified notifiable diseases, United States

Disease	39th Week Ending			Cumulative, 39th Week Ending		
	Sept. 28, 1985	Sept. 29, 1984	Median 1980-1984	Sept. 28, 1985	Sept. 29, 1984	Median 1980-1984
Acquired Immunodeficiency Syndrome (AIDS)	196	127	N	5,802	3,067	N
Aspergillus meningitis	419	299	343	6,617	5,649	6,445
Encephalitis: Primary (arthropod-borne & unsp.)	35	35	65	814	801	1,099
Post-infectious	1	2	-	99	93	75
Gonorrhea: Civilian	116,379	19,242	19,606	626,232	621,844	716,809
Military	337	489	436	13,735	16,243	20,307
Hepatitis: Type A	536	505	489	16,480	15,588	16,849
Type B	581	583	447	19,220	19,092	16,070
Non A, Non B	96	74	N	3,075	2,794	N
Unspecified	131	135	178	4,254	3,709	6,518
Legionellosis	16	19	N	458	491	N
Leprosy	4	7	7	277	176	176
Malaria	15	16	29	756	714	838
Measles: Total*	28	15	23	2,489	2,338	2,338
Indigenous	25	10	N	2,059	2,064	N
Imported	3	5	N	430	274	N
Meningococcal infections: Total	32	36	36	1,808	2,108	2,108
Civilian	32	36	36	1,805	2,104	2,104
Military	-	-	-	3	4	13
Mumps	28	36	45	2,288	2,287	3,364
Pertussis	73	91	59	2,064	1,833	1,273
Rubella (German measles)	5	7	9	556	612	1,797
Syphilis (Primary & Secondary): Civilian	659	714	607	19,039	20,976	22,891
Military	9	2	8	116	236	286
Toxic Shock syndrome	2	11	N	269	366	N
Tuberculosis	412	459	549	15,839	15,905	18,988
Typhoid fever	4	5	5	123	241	205
Typhus fever, tick-borne (RMSF)	8	9	13	263	254	325
Rabies, animal	15	15	24	580	726	1,018
	100	135	127	3,980	4,093	4,838

TABLE II. Notifiable diseases of low frequency, United States

	Cum 1985		Cum 1985
Anthrax	-	Leptospirosis	28
Botulism: Foodborne (Ariz. 1)	39	Plague	11
Infant (Wash. 1, Calif. 2)	46	Potomycelitis: Total	4
Other	1	Paratyphoid	4
Brucellosis (Ark. 1, Tex. 2, Calif. 2)	105	Psittacosis	84
Cholera	3	Rabies, human	-
Congenital rubella syndrome	-	Tetanus	48
Congenital syphilis, ages < 1 year	111	Trichinosis	50
Diphtheria	1	Typhus fever, flea-borne (endemic, murine)	19

*Three of the 28 reported cases for this week were imported from a foreign country or can be directly traceable to a known internationally imported case within two generations.

TABLE III. Cases of specified notifiable diseases, United States, weeks ending
September 28, 1985 and September 29, 1984 (39th Week)

Reporting Area	AIDS	Aseptic Meningitis	Encephalitis		Gonorrhea (Civilian)		Hepatitis (Viral), by type				Legionel- losis	
			Primary	Post-in- fectious			A	B	NA, NB	Unspeci- fied		
	Cum. 1985	1985	Cum. 1985	Cum. 1985	Cum. 1985	Cum. 1984	1985	1985	1985	1985	1985	Cum. 1985
UNITED STATES	5,802	419	814	99	526,232	621,844	538	591	96	131	16	277
NEW ENGLAND	202	38	22	-	16,990	17,120	8	34	1	3	5	6
Maine	9	-	-	-	851	731	-	1	-	-	-	-
N.H.	-	1	5	-	419	516	-	1	-	-	1	-
Vt.	1	2	-	-	253	286	-	-	-	-	-	-
Mass.	124	22	15	-	6,658	7,203	6	24	-	3	4	6
R.I.	10	11	-	-	1,380	1,173	-	1	-	-	-	-
Conn.	58	2	2	-	7,429	7,211	2	7	1	-	-	-
MID ATLANTIC	2,296	89	106	11	94,468	84,184	27	38	7	2	-	29
Upstate N.Y.	264	40	33	4	13,029	13,130	21	17	4	-	-	1
N.Y. City	1,557	48	12	-	46,733	34,297	1	1	-	2	-	25
N.J.	349	-	25	-	14,612	14,117	5	18	3	-	-	-
Pa.	126	U	36	7	20,094	22,640	U	U	U	U	U	3
E.N. CENTRAL	247	93	205	20	88,854	87,244	25	64	10	7	1	21
Ohio	43	39	85	4	23,059	22,801	11	18	2	2	1	3
Ind.	19	10	44	2	9,692	9,820	5	20	6	1	-	-
Ill.	125	-	14	8	22,119	19,707	2	2	1	2	-	16
Mich.	42	44	44	-	25,363	25,392	7	24	1	2	-	2
Wis.	18	-	18	6	8,621	9,524	-	-	-	-	-	-
W.N. CENTRAL	73	21	62	3	30,796	30,528	85	13	3	1	1	1
Minn.	21	4	28	1	4,598	4,623	56	3	-	-	-	-
Iowa	9	3	23	-	3,300	3,338	-	-	-	1	-	-
Mo.	32	11	-	-	14,916	14,866	4	8	2	-	-	1
N. Dak.	-	-	-	1	206	282	-	-	-	-	-	-
S. Dak.	1	1	-	-	590	702	19	1	1	-	-	-
Nebr.	2	-	5	-	2,525	2,172	1	1	-	-	1	-
Kans.	8	2	6	1	4,661	4,745	5	-	-	-	-	-
S. ATLANTIC	890	71	97	36	137,904	158,119	45	115	22	8	6	7
Del.	10	4	5	-	3,280	2,934	-	-	-	-	1	-
Md.	104	11	20	1	22,135	18,319	-	5	4	2	-	1
D.C.	117	1	-	-	11,630	11,278	-	-	-	-	-	-
Va.	73	15	22	5	14,376	14,973	1	10	2	-	1	-
W. Va.	5	2	22	-	1,959	1,965	-	3	1	-	2	-
N.C.	44	11	24	-	26,914	25,880	3	19	3	1	1	2
S.C.	23	2	4	-	16,525	16,068	2	17	1	-	-	1
Ga.	134	8	-	-	28,722	28,722	10	20	3	1	-	1
Fla.	380	17	-	30	41,085	38,000	29	41	8	4	1	3
E.S. CENTRAL	50	30	25	4	56,436	55,089	9	41	2	-	-	-
Ky.	13	7	8	-	6,486	6,655	4	14	-	-	-	-
Tenn.	15	5	6	-	21,475	22,671	1	11	2	-	-	-
Ala.	19	14	9	4	17,067	17,191	-	4	-	-	-	-
Miss.	3	4	2	-	11,408	8,572	4	12	-	-	-	-
W.S. CENTRAL	417	29	103	2	83,789	84,910	69	45	6	33	1	17
Ark.	5	1	3	1	8,163	7,785	6	4	1	-	-	1
La.	71	5	3	-	16,156	16,820	2	1	-	3	-	1
Okl.	23	3	23	1	9,253	9,278	8	4	1	1	1	-
Tex.	138	20	74	-	50,217	49,047	53	36	4	29	-	15
MOUNTAIN	100	10	32	6	20,530	20,385	64	41	8	9	1	7
Mont.	-	1	-	-	576	835	1	2	-	1	-	-
Idaho	-	-	-	-	657	982	4	-	1	-	-	-
Wyo.	-	-	-	-	476	567	-	1	-	-	-	-
Colo.	45	5	6	2	8,059	5,828	8	5	1	5	-	2
N. Mex.	12	1	3	-	2,387	2,374	-	-	-	-	-	-
Ariz.	26	1	9	-	6,005	5,582	31	21	4	1	1	1
Utah	12	1	10	4	941	986	5	6	-	2	-	3
Nev.	5	1	3	-	3,429	3,231	15	6	2	-	-	1
PACIFIC	1,527	38	162	17	96,465	84,265	204	202	37	68	1	189
Wash.	80	2	13	-	7,205	6,467	3	8	3	2	-	33
Oreg.	23	-	1	-	4,846	4,934	54	10	3	2	-	3
Calif.	1,403	35	127	17	80,811	69,301	140	180	31	64	1	134
Alaska	3	-	21	-	2,249	2,111	-	2	-	-	-	-
Hawaii	18	1	-	-	1,354	1,452	7	2	-	-	-	19
Guam	1	U	-	-	119	185	U	U	U	U	U	3
P.R.	65	1	5	2	2,467	2,805	-	9	-	6	-	2
V.I.	2	-	-	-	345	412	1	-	-	-	-	-
Pac. Trust Terr.	-	U	-	-	146	-	U	U	U	U	U	20

N: Not notifiable

U: Unavailable

TABLE III. (Cont'd.) Cases of specified notifiable diseases, United States, weeks ending September 28, 1985 and September 29, 1984 (39th Week)

Reporting Area	Measles		Measles (Rubella)				Meningococcal Infections		Mumps		Pertussis			Rubella		
			Indigenous		Imported *											
	Cum. 1985	1985	Cum. 1985	1985	Cum. 1985	Cum. 1984	Cum. 1985	1985	Cum. 1985	1985	Cum. 1985	Cum. 1984	1985	Cum. 1985	Cum. 1984	1984
UNITED STATES	758	25	2,059	3	430	2,338	1,808	28	2,288	73	2,064	1,833	5	556	612	
NEW ENGLAND	41	-	38	-	88	105	83	1	53	2	111	48	-	12	18	
Maine	4	-	-	-	1	-	3	-	6	-	11	2	-	-	1	
N.H.	4	-	-	-	-	36	14	-	9	-	39	7	-	2	1	
Vt.	1	-	-	-	-	7	10	-	2	-	3	20	-	-	-	
Mass.	19	-	34	-	84	48	13	1	15	2	37	13	-	6	16	
R.I.	3	-	-	-	-	-	14	-	14	-	14	2	-	-	-	
Conn.	10	-	4	-	3	14	29	-	7	-	7	4	-	4	-	
MID ATLANTIC	122	3	172	3	37	151	326	4	254	6	128	148	2	218	215	
Upstate N.Y.	41	-	71	-	13	38	125	-	134	1	60	83	-	17	99	
N.Y. City	45	3	58	3	11	103	58	2	32	3	19	7	2	178	98	
N.J.	14	-	17	-	10	7	49	2	34	2	7	11	-	9	17	
Pa.	22	U	28	U	3	5	94	U	54	U	42	47	U	14	1	
E.N. CENTRAL	39	-	434	-	89	691	314	5	844	12	440	443	-	29	84	
Ohio	8	-	-	-	84	9	104	2	251	12	76	68	-	-	2	
Ind.	4	-	55	-	2	3	40	1	37	-	135	225	-	1	5	
Ill.	6	-	286	-	9	179	71	2	184	-	29	23	-	12	49	
Mich.	15	-	37	-	23	481	71	-	290	-	41	28	-	15	20	
Wis.	6	-	56	-	1	39	28	-	82	-	159	99	-	1	8	
W.N. CENTRAL	27	-	1	-	10	46	91	1	70	7	150	111	-	19	35	
Minn.	11	-	-	-	6	38	23	-	1	5	77	12	-	2	4	
Iowa	2	-	-	-	-	-	8	1	13	1	7	10	-	1	1	
Mo.	5	-	-	-	2	3	35	-	11	1	27	18	-	7	-	
N. Dak.	2	-	-	-	2	-	4	-	3	-	9	-	-	2	3	
S. Dak.	1	-	-	-	-	-	3	-	2	-	4	11	-	-	-	
Nebr.	1	-	-	-	-	-	7	-	2	-	4	11	-	-	-	
Kans.	5	-	1	-	-	5	11	-	40	-	24	52	-	7	27	
S. ATLANTIC	91	1	270	-	30	51	350	3	213	11	319	186	1	55	23	
Del.	-	-	-	-	-	-	6	-	1	-	1	2	-	1	-	
Md.	22	1	98	-	9	20	49	1	28	5	131	57	-	6	1	
D.C.	5	-	9	-	1	8	6	-	-	-	-	-	-	-	-	
Va.	19	-	21	-	7	5	43	-	42	-	14	19	-	2	-	
W. Va.	2	-	31	-	2	-	8	1	59	-	4	11	-	9	-	
N.C.	8	-	9	-	-	-	46	1	13	2	23	32	1	1	-	
S.C.	-	-	-	-	3	1	34	-	7	-	2	2	-	3	-	
Ge.	7	-	8	-	-	1	58	-	28	1	86	14	-	4	2	
Fla.	28	-	96	-	8	16	98	-	35	3	57	49	-	29	20	
E.S. CENTRAL	9	-	-	-	7	6	82	-	27	-	42	13	-	3	9	
Ky.	3	-	-	-	5	1	8	-	8	-	8	1	-	3	3	
Tenn.	-	-	-	-	1	2	32	-	15	-	19	7	-	-	-	
Ala.	5	-	-	-	-	3	25	-	1	-	11	1	-	-	3	
Miss.	1	-	-	-	1	-	17	-	3	-	4	4	-	-	3	
W.S. CENTRAL	72	2	418	-	15	533	150	6	243	12	325	295	1	33	54	
Ark.	2	-	-	-	-	8	14	-	6	2	14	18	-	1	3	
La.	1	-	42	-	-	8	23	-	2	1	12	6	-	-	-	
Okl.	3	-	-	-	1	8	28	N	N	1	131	237	-	1	-	
Tex.	66	2	374	-	14	509	85	6	235	8	168	24	1	31	51	
MOUNTAIN	42	4	496	-	51	145	76	-	213	11	169	105	-	5	21	
Mont.	-	-	122	-	17	-	5	-	9	1	9	19	-	-	-	
Idaho	2	-	126	-	18	23	2	-	9	-	5	7	-	1	1	
Wyo.	1	4	4	-	-	-	6	-	2	-	-	6	-	-	2	
Colo.	12	-	6	-	7	6	21	-	18	3	65	34	-	-	2	
N. Mex.	14	-	1	-	5	88	8	N	N	-	12	6	-	2	1	
Ariz.	8	-	237	-	4	1	19	-	106	6	33	22	-	1	6	
Utah	2	-	-	-	-	27	9	-	6	1	45	7	-	-	7	
Nev.	3	-	-	-	-	-	6	-	83	-	-	2	-	1	4	
PACIFIC	313	15	232	-	103	610	336	8	371	12	380	494	1	182	153	
Wash.	23	-	31	-	39	140	59	-	31	7	67	282	-	14	1	
Oreg.	12	-	4	-	1	-	30	N	N	-	40	25	-	1	2	
Calif.	281	15	179	-	58	307	234	5	314	5	227	114	1	124	145	
Alaska	2	-	-	-	-	-	9	-	8	-	29	1	-	1	1	
Hawaii	15	-	18	-	5	163	4	3	18	-	17	72	-	42	4	
Guam	1	U	10	U	1	90	-	U	5	U	-	-	U	2	4	
P.R.	-	-	83	-	-	14	12	5	138	-	10	1	-	25	9	
V.I.	-	-	4	-	6	-	-	-	3	-	-	-	-	-	-	
Pac. Trust Terr.	-	U	-	U	-	-	-	U	3	U	-	-	U	-	-	

*For measles only, imported cases includes both out-of-state and international importations.

N: Not notifiable U: Unavailable I: International O: Out-of-state

TABLE III. (Cont'd.) Cases of specified notifiable diseases, United States, weeks ending
September 28, 1985 and September 29, 1984 (39th Week)

Reporting Area	Syphilis (Civilian) (Primary & Secondary)		Toxic- shock Syndrome	Tuberculosis		Tula- remia	Typhoid Fever	Typhus Fever (Tick-borne) (RMSF)	Rabies, Animal
	Cum. 1985	Cum. 1984		Cum. 1985	Cum. 1984				
UNITED STATES	19,039	20,976	2	15,839	15,905	123	263	580	3,980
NEW ENGLAND	440	383	-	524	475	3	11	7	19
Maine	13	4	-	38	21	-	-	-	-
N.H.	35	12	-	15	25	-	-	1	1
Vt.	5	1	-	5	7	-	-	-	-
Mass.	217	220	-	315	262	3	8	5	11
R.I.	14	16	-	38	37	-	-	1	-
Conn.	156	130	-	113	123	-	3	-	7
MID ATLANTIC	2,628	2,840	-	2,889	2,880	2	40	31	395
Upstate N.Y.	200	243	-	517	454	-	10	9	91
N.Y. City	1,589	1,752	-	1,403	1,160	1	22	4	-
N.J.	527	490	-	383	643	1	7	4	36
Pa.	312	355	U	586	623	-	1	14	269
E.N. CENTRAL	778	980	-	1,960	2,060	2	31	40	147
Ohio	114	185	-	345	380	-	7	28	27
Ind.	71	103	-	241	249	-	3	4	21
Ill.	381	327	-	844	855	1	13	6	28
Mich.	162	305	-	418	446	-	6	2	21
Wis.	50	60	-	112	130	1	2	-	50
W.N. CENTRAL	172	287	-	440	490	35	11	38	727
Minn.	35	78	-	94	78	1	6	-	150
Iowa	17	11	-	46	50	-	2	1	128
Mo.	90	147	-	214	247	22	2	4	38
N. Dak.	2	9	-	7	11	-	-	-	105
S. Dak.	6	-	-	22	18	7	-	2	237
Nebr.	6	11	-	11	27	2	1	3	30
Kans.	17	31	-	46	59	3	-	27	39
S. ATLANTIC	4,847	6,169	-	3,104	3,334	6	29	277	1,044
Del.	29	14	-	28	45	1	-	3	-
Md.	328	387	-	281	314	-	10	26	526
D.C.	261	245	-	123	140	-	-	-	-
Va.	224	316	-	287	343	1	3	18	139
W. Va.	18	14	-	83	104	-	-	1	22
N.C.	518	628	-	404	478	4	3	119	11
S.C.	621	585	-	396	397	-	1	68	58
Ga.	-	1,059	-	541	516	-	2	36	152
Fla.	2,840	2,920	-	1,051	997	-	10	6	136
E.S. CENTRAL	1,669	1,486	1	1,396	1,471	7	4	59	200
Ky.	54	78	1	336	348	-	1	9	27
Tenn.	492	399	-	400	447	5	1	28	55
Ala.	470	474	-	421	446	1	2	13	113
Miss.	663	535	-	239	230	1	-	9	5
W.S. CENTRAL	4,579	5,146	-	2,010	1,870	47	23	111	670
Ark.	244	167	-	207	201	27	-	14	110
La.	813	928	-	303	261	-	-	2	16
Okla.	138	165	-	194	175	15	2	81	86
Tex.	3,394	3,896	-	1,306	1,233	5	21	14	458
MOUNTAIN	553	472	-	417	434	14	11	14	335
Mont.	6	3	-	46	17	4	-	6	156
Idaho	6	20	-	20	24	-	-	-	9
Wyo.	8	7	-	5	5	-	-	-	4
Colo.	137	125	-	49	52	2	4	2	16
N. Mex.	106	63	-	73	85	2	4	-	21
Ariz.	248	162	-	186	197	4	3	-	110
Utah	5	17	-	12	31	2	-	-	4
Nev.	37	75	-	26	28	-	-	2	8
PACIFIC	3,373	3,213	1	3,009	2,891	7	103	3	443
Wash.	80	120	1	191	145	-	1	-	4
Oreg.	75	82	-	98	116	1	-	-	4
Calif.	3,164	2,948	-	2,505	2,413	4	98	3	432
Alaska	2	5	-	72	51	2	-	-	3
Hawaii	52	58	-	143	166	-	4	-	-
Guam	2	-	U	30	41	-	-	-	-
P.R.	616	615	-	288	285	-	2	-	31
V.I.	3	8	-	1	3	-	52	-	-
Pac. Trust Terr.	13	-	U	16	-	-	-	-	-

U: Unavailable

TABLE IV. Deaths in 121 U.S. cities,* week ending
September 28, 1985 (39th Week)

Reporting Area	All Causes, By Age (Years)							P&I** Total	Reporting Area	All Causes, By Age (Years)							P&I** Total
	All Ages	≥65	45-64	25-44	1-24	<1				All Ages	≥65	45-64	25-44	1-24	<1		
NEW ENGLAND	867	488	139	31	11	20	43		S. ATLANTIC	1,268	788	288	107	46	41	55	
Boston, Mass.	164	110	37	7	4	6	12		Atlanta, Ga.	142	75	35	24	6	2	5	
Bridgeport, Conn.	54	39	9	4	1	1	-		Baltimore, Md.	284	174	51	24	10	5	9	
Cambridge, Mass.	35	26	6	2	1	-	5		Charlotte, N.C.	69	48	15	2	1	3	6	
Fall River, Mass.	33	21	11	1	-	-	1		Jacksonville, Fla.	130	80	26	12	6	6	6	
Hartford, Conn.	64	43	18	1	1	3	4		Miami, Fla.	114	70	34	7	2	1	3	
Lowell, Mass.	25	18	3	1	1	2	1		Norfolk, Va.	35	16	13	2	1	3	6	
Lynn, Mass.	14	12	2	-	-	-	-		Richmond, Va.	84	52	20	4	6	2	8	
New Bedford, Mass.	26	17	5	3	-	1	2		Savannah, Ga.	71	40	25	6	-	-	7	
New Haven, Conn.	56	38	11	4	1	2	3		St. Petersburg, Fla.	95	79	10	3	1	2	1	
Providence, R.I.	67	47	17	3	-	-	1		Tampa, Fla.	60	40	14	2	2	2	2	
Somerville, Mass.	9	7	2	-	-	-	-		Washington, D.C.	182	100	41	15	11	15	1	
Springfield, Mass.	29	18	8	2	1	1	6		Wilmington, Del.	22	14	2	6	-	-	1	
Waterbury, Conn.	39	30	6	1	1	1	6										
Worcester, Mass.	52	40	6	2	-	4	7										
MID ATLANTIC	2,690	2,133	303	108	65	79	113		E.S. CENTRAL	745	489	182	43	15	16	34	
Albany, N.Y.	55	31	13	4	1	6	-		Birmingham, Ala.	93	58	21	5	4	5	1	
Albany, N.Y.	17	14	3	-	-	-	-		Chattanooga, Tenn.	69	48	16	3	-	2	4	
Buffalo, N.Y.	124	81	28	8	3	4	10		Knockville, Tenn.	65	44	15	4	2	-	3	
Camden, N.J.	39	24	10	2	1	2	3		Louisville, Ky.	136	79	46	8	1	2	8	
Elizabeth, N.J.	22	11	7	3	1	-	-		Memphis, Tenn.	155	106	33	10	3	3	9	
Encl. Pa.	33	23	6	1	3	-	2		Mobile, Ala.	89	65	17	3	2	1	4	
Jersey City, N.J.	64	48	6	5	1	3	-		Montgomery, Ala.	51	30	10	7	1	3	2	
N.Y. City, N.Y.	1,356	1,280	6	16	32	22	46		Nashville, Tenn.	87	58	24	3	2	-	3	
Hewlett, N.J.	73	45	14	9	3	2	6										
Petersburg, N.J.	32	20	6	2	-	4	1		W.S. CENTRAL	1,537	902	363	145	64	63	65	
Philadelphia, Pa.	419	250	102	34	13	20	18		Austin, Tex.	55	34	17	7	5	2	5	
Pittsburgh, Pa.	76	51	19	3	-	3	5		Baton Rouge, La.	47	21	15	5	1	5	6	
Reading, Pa.	26	20	4	-	-	2	2		Corpus Christi, Tex.	64	37	17	3	2	5	-	
Rochester, N.Y.	121	78	32	8	2	3	10		Dallas, Tex.	161	92	44	15	8	2	9	
Schenectady, N.Y.	31	22	7	1	-	1	1		El Paso, Tex.	53	38	8	3	-	4	4	
Scranton, Pa.	28	21	5	-	2	2	-		Fort Worth, Tex.	99	61	23	7	3	5	6	
Syracuse, N.Y.	84	45	23	6	3	7	1		Houston, Tex.	508	273	115	70	30	20	13	
Trenton, N.J.	27	17	9	1	-	-	-		Little Rock, Ark.	59	36	13	2	1	7	4	
Utica, N.Y.	22	19	2	1	-	-	1		New Orleans, La.	154	98	40	8	4	4	-	
Yonkers, N.Y.	41	34	3	4	-	-	5		San Antonio, Tex.	200	125	40	20	8	7	14	
									Shreveport, La.	31	23	6	2	-	-	2	
									Tulsa, Okla.	96	64	25	3	2	2	2	
E.N. CENTRAL	2,251	1,565	374	137	72	112	94		MOUNTAIN	543	328	130	46	19	20	25	
Akron, Ohio	81	39	11	6	1	4	1		Albuquerque, N.Mex.	69	38	17	5	6	5	1	
Canton, Ohio	35	24	8	2	1	-	2		Colorado Springs, Colo.	41	27	11	1	1	1	5	
Chicago, Ill.	553	462	11	26	16	37	16		Denver, Colo.	100	60	22	11	1	6	3	
Cincinnati, Ohio	171	94	40	7	10	20	15		Las Vegas, Nev.	65	38	17	9	-	1	4	
Cleveland, Ohio	176	118	40	9	4	5	3		Ogden, Utah	29	21	4	2	2	-	2	
Columbus, Ohio	120	73	22	9	8	8	10		Phoenix, Ariz.	108	55	30	13	7	3	-	
Dayton, Ohio	95	59	27	6	3	-	2		Pueblo, Colo.	21	15	4	1	-	1	2	
Detroit, Mich.	238	153	49	18	6	12	7		Salt Lake City, Utah	38	25	11	1	-	1	2	
Evansville, Ind.	59	41	14	2	-	2	2		Tucson, Ariz.	72	51	14	3	2	2	6	
Fort Wayne, Ind.	39	29	3	4	3	-	3										
Gary, Ind.	13	4	4	2	3	-	2		PACIFIC	1,870	1,192	387	181	52	64	83	
Grand Rapids, Mich.	64	47	10	4	-	3	4		Berkeley, Calif.	24	16	2	2	2	2	1	
Indianapolis, Ind.	182	111	42	12	7	10	1		Fresno, Calif.	68	45	15	5	1	2	7	
Madison, Wis.	41	21	15	1	2	1	2		Glendale, Calif.	28	17	8	-	3	-	-	
Milwaukee, Wis.	115	75	31	3	1	5	7		Honolulu, Hawaii	60	40	11	6	1	2	5	
Peoria, Ill.	41	33	5	-	1	2	3		Long Beach, Calif.	76	41	23	5	2	5	7	
Rockford, Ill.	47	34	8	5	-	-	1		Los Angeles, Calif.	576	363	122	64	19	4	15	
South Bend, Ind.	45	35	5	4	1	-	6		Oakland, Calif.	67	38	19	4	1	5	1	
Toledo, Ohio	97	72	17	2	4	2	8		Pasadena, Calif.	10	9	1	1	-	-	-	
Youngstown, Ohio	59	41	12	5	1	-	1		Portland, Oreg.	130	94	24	5	1	6	4	
									Sacramento, Calif.	134	92	27	9	1	5	8	
W.N. CENTRAL	750	515	135	44	28	28	21		San Diego, Calif.	152	98	29	17	6	2	10	
Des Moines, Iowa	73	44	19	8	1	1	2		San Francisco, Calif.	147	80	30	28	4	5	4	
Duluth, Minn.	29	24	2	2	1	-	1		San Jose, Calif.	158	95	36	19	3	5	12	
Kansas City, Kans.	40	22	11	3	2	2	1		Seattle, Wash.	148	97	29	14	5	3	3	
Kansas City, Mo.	113	76	22	6	5	2	2		Spokane, Wash.	41	31	2	2	2	4	4	
Lincoln, Neb.	38	28	8	1	1	-	2		Tacoma, Wash.	51	36	9	1	1	4	2	
Minneapolis, Minn.	91	58	11	10	7	5	2										
Omaha, Neb.	89	64	13	2	2	8	5		TOTAL	12,321	8,378	2,301	832	372	433	533	
St. Louis, Mo.	144	107	19	7	5	6	-										
St. Paul, Minn.	65	44	14	4	2	1	2										
Wichita, Kans.	68	46	16	1	2	3	4										

*Mortality data in this table are voluntarily reported from 121 cities in the United States, most of which have populations of 100,000 or more. A death is reported by the place of its occurrence and by the week that the death certificate was filed. Fetal deaths are not included.

** Pneumonia and influenza.

† Because of changes in reporting methods in these 3 Pennsylvania cities, these numbers are partial counts for the current week. Complete counts will be available in 4 to 6 weeks.

‡ Total includes unknown ages.

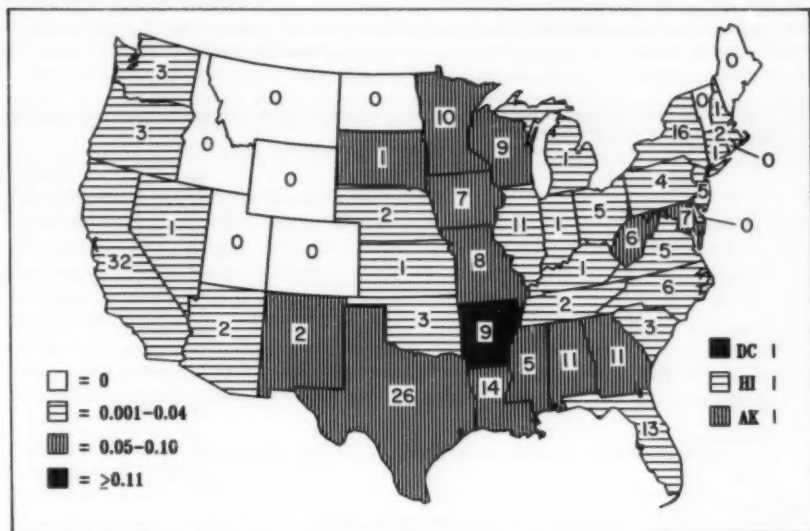
§ Data not available. Figures are estimates based on average of past 4 weeks.

Tetanus — Continued

0.39/100,000 in 1947, when national reporting began. The estimated average annual age-specific incidence rates progressively increased by age group, with a sevenfold increase from the 5- to 19-year to 20- to 29-year age group and a ninefold increase from the 20- to 29-year to 60 years and older age group (Table 4).

Case report forms for 234 (92%) patients with onset during these years provided information on demographic characteristics, immunization history, circumstances of injury or other medical condition, and tetanus prophylaxis used in wound management. Extrapolating from 229 patients for whom race was known, the estimated average annual incidence rate for whites was 0.033/100,000 (177 cases); for blacks, 0.059/100,000 (45 cases); and for all other races, 0.040/100,000 (seven cases).

FIGURE 4. Average annual incidence rates* and total cases of tetanus, by state — United States, 1982-1984



*Per 100,000 total population using July 1, 1982, population estimate.

TABLE 4. Average annual crude incidence rates of reported tetanus cases,* by age group — United States, 1982-1984

Age (years)	Rates
0-4	0.012
5-19	0.002
20-29	0.014
30-39	0.024
40-49	0.029
50-59	0.047
≥ 60	0.132

*Determined from extrapolating the age distribution of 244 cases in patients with known age to the entire 253 cases reported to *MMWR* and using July 1, 1982, population estimates as denominators.

Tetanus — Continued

One hundred fifty-nine (71%) of the 224 patients with known ages were 50 years of age or older; six (3%) were 1 month to 19 years of age; and 56 (25%) were 20-49 years of age (Table 5). Three cases of neonatal tetanus were reported (Texas—two; California—one); two of the mothers had no history of prior immunization, and the third had no history of completing primary immunization. All three infants survived. The remainder of this report covers 231 cases of tetanus that occurred among individuals ages 1 month and older.

The case-fatality rate was 26% (52% for patients 60 years of age and older and 13% for those under age 60). No deaths occurred among patients under 30 years of age.

Eleven (5%) of the 231 patients had received at least a primary series of tetanus toxoid* before onset (Table 6). Of these, three received their third dose of tetanus toxoid as part of wound prophylaxis, and three had not received a dose within the preceding 10 years. Two hundred fifteen patients (93%) had received fewer than two doses of toxoid before onset of illness or had received an unknown number of doses.

*Primary immunization against tetanus consists of three doses of tetanus toxoid assuming at least 1 month between doses 1 and 2 and at least 6 months between doses 2 and 3 (7).

TABLE 5. Age distribution of tetanus patients reported with supplementary information — United States, 1982-1984

Age (years)	No. (%)
0-4	5* (2.2)
5-19	4 (1.8)
20-29	16 (7.1)
30-39	21 (9.4)
40-49	19 (8.5)
50-59	27 (12.1)
60-69	49 (21.9)
70-79	51 (22.8)
≥ 80	32 (14.3)
Subtotal	224 (100.1)
Unknown	10
Total	234

*Includes three cases in neonates.

TABLE 6. Immunization status in reported non-neonatal tetanus cases — United States, 1982-1984

Immunization status	No. (%)
0 dose	56 (24.2)
1 dose	37 (16.0)
2 doses	5 (2.2)
3 doses	5* (2.2)
≥ 4 doses	6 (2.6)
Unknown no. of doses	53 (22.9)
Unknown status	69 (29.9)
Total	231 (100.0)

*Includes three patients who received dose 3 as part of wound management.

Tetanus — Continued

Tetanus occurred after an identified acute injury in 166 cases (72%). The most frequently reported acute injuries were puncture wounds (37%) and lacerations (35%). Injuries incurred indoors accounted for 41% of acute wounds; gardening and other outdoor injuries, for 39%; animal-associated injuries and major trauma, for 4% each; and other and unknown circumstances, for 12%. The median incubation period for the 142 tetanus patients with known interval between acute injury and onset was 8 days. One hundred thirty-one (92%) had an incubation period of 14 days or less. For 18 (13%) patients, the interval between wound and onset was reported to be 3 days or less. Tetanus toxoid was given as prophylaxis in wound management to 42 patients (25%) with acute wounds; two patients also received tetanus immune globulin (TIG). Of the 42 patients, 34 (81%) received prophylaxis within 3 days of the injury.

Fifty-six patients had acute wounds severe enough to require debridement after injury but before onset of tetanus. Based on the current recommendations of the Immunization Practices Advisory Committee (ACIP) for wound management (Table 7) (1), 55 of these patients were candidates for both Tetanus and Diphtheria Toxoids (Td) and TIG; none received TIG, and 22 (40%) received Td in the course of wound management. One patient was a candidate for Td only but did not receive tetanus toxoid.

Forty-eight cases (21%) were associated with chronic wounds or underlying medical conditions, such as skin ulcers, abscesses, or gangrene; a history of parenteral drug abuse was the only associated medical condition reported for five (2%) patients. A known acute injury, a chronic wound, or any other preexisting medical condition was not reported for 17 (7%) patients.

Reported by Div of Immunization, Center for Prevention Svcs, CDC.

Editorial Note: Following a steady decline in the average annual crude incidence rate of tetanus between 1947 and 1976, the rate has not changed substantially (Figure 5). The decline results both from immunization and careful wound management, since naturally acquired immunity against tetanus is undocumented in the United States. However, tetanus is a continuing health burden and has a high case-fatality ratio, primarily among the unimmunized and inadequately immunized. Approximately 95% of patients reported with tetanus during 1982-1984 had not received a primary series of tetanus toxoid. Vaccination with a primary series of three doses of tetanus toxoid and booster doses every 10 years is highly effective in

TABLE 7. Summary guide to tetanus prophylaxis in routine wound management — United States, 1985*

History of adsorbed tetanus toxoid	Clean, minor wounds		All other wounds†	
	Td§	TIG	Td§	TIG
Unknown or < three doses	Yes	No	Yes	Yes
≥ three doses¶	No**	No	No††	No

*ACIP. Diphtheria, tetanus and pertussis: guidelines for vaccine prophylaxis and other preventive measures. MMWR 1985;34:405-14, 419-26.

†Such as, but not limited to, wounds contaminated with dirt, feces, soil, saliva, etc.; puncture wounds; avulsions; and wounds resulting from missiles, crushing, burns, and frostbite.

§For children less than 7 years old; DTP (DT, if pertussis vaccine is contraindicated) is preferred to tetanus toxoid alone. For persons 7 years old and older, Td is preferred to tetanus toxoid alone.

¶If only three doses of fluid toxoid have been received, then a fourth dose of toxoid, preferably an adsorbed toxoid, should be given.

**Yes, if more than 10 years since last dose.

††Yes, if more than 5 years since last dose. (More frequent boosters are not needed and can accentuate side effects.)

Tetanus — Continued

preventing tetanus (2). Single-antigen tetanus toxoid is not recommended for use in routine immunization or in general wound management. The recommended preparation for individuals 7 years of age and older is Tetanus and Diphtheria Toxoids Adsorbed (For Adult Use) (Td). The recommended preparation for children before the seventh birthday is Diphtheria and Tetanus Toxoids and Pertussis Vaccine (DTP); Diphtheria and Tetanus Toxoids (For Pediatric Use) (DT) is recommended for children before the seventh birthday for whom pertussis antigen is contraindicated (1).

Tetanus cases are most frequently associated with acute wounds; most of these patients did not receive tetanus prophylaxis following the wound. It is uncertain what proportion of patients sought care for their wounds. Among tetanus patients in whom the associated wound was debrided, health-care contact did not result in the use of recommended Td/TIG. Underprophylaxis may have occurred in other tetanus patients who sought care (8). Primary immunization and routine maintenance of an up-to-date immunization status is necessary to prevent tetanus that is not associated with acute wounds or that occurs in persons who do not seek medical care for their wounds. Routine use of tetanus toxoid-containing preparations would also eliminate the need for, or simplify, tetanus prophylaxis in wound management for a given individual.

The relative absence of tetanus among persons 5-19 years of age reflects the success of the U.S. childhood vaccination program. Forty-seven states and the District of Columbia require primary immunization against tetanus for entry into school. Annual nationwide surveys indicate over 95% of children entering school since 1980 had received a primary series of tetanus immunizations. However, immunity levels in older populations are lower. In particular, serosurveys done since 1977 indicated that 49%-66% of persons 60 years of age or older lacked protective levels of circulating antitoxin antibody against tetanus (3-5). Expanded efforts to ensure that vaccination against tetanus is up-to-date in individuals of all ages could

FIGURE 5. Reported annual crude incidence rates of tetanus — United States, 1947*-1984



*National reporting began.

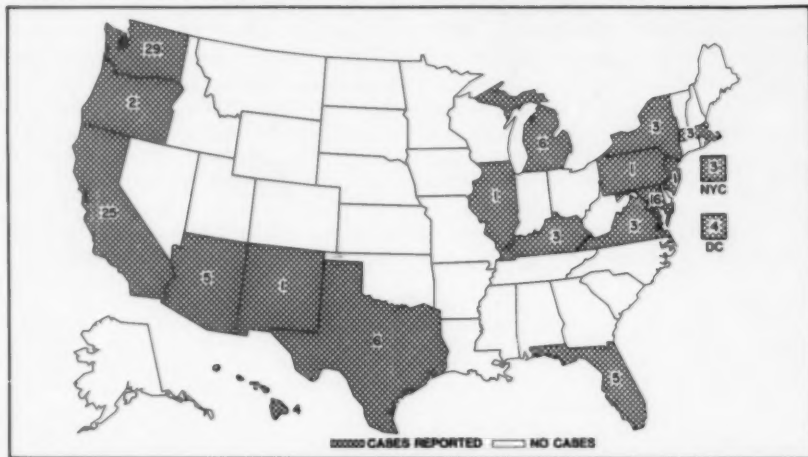
Tetanus — Continued

reduce further the remaining burden of tetanus in the United States. Efforts need to be directed primarily towards older adults, especially those 50 years of age and older who account for over 70% of current cases. One method to ensure adequate protection is to routinely provide booster doses of Td at mid-decade ages, i.e., 15 years, 25 years, 35 years, etc. Td is the only universally recommended immunization for individuals of all ages. As with tetanus, a substantial proportion of the remaining morbidity and mortality from other vaccine-preventable diseases now occurs among older adolescents and adults. The ACIP and the American College of Physicians have published recommendations for immunization of adults (6, 7). All persons providing health care to older adolescents and adults should review the immunization status of patients and provide tetanus and diphtheria toxoids and, when indicated, measles, rubella, influenza, pneumococcal, and hepatitis B vaccines to persons found to be inadequately immunized.

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FIGURE 1. Reported measles cases — United States, weeks 35-38, 1985



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The editor welcomes accounts of interesting cases, outbreaks, environmental hazards, or other public health problems of current interest to health officials. Such reports and any other matters pertaining to editorial or other textual considerations should be addressed to: ATTN: Editor, *Morbidity and Mortality Weekly Report*, Centers for Disease Control, Atlanta, Georgia 30333.

Director, Centers for Disease Control
James O. Mason, M.D., Dr.P.H.
Director, Epidemiology Program Office
Carl W. Tyler, Jr., M.D.

Editor Pro Tem
Janet B. Arrowsmith, M.D.
Assistant Editor
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